

Application No. 09/889,860
Filed: July 23, 2001
TC Art Unit: 1733
Confirmation No.: 1184

REMARKS

Claims 1-4, 6-10, 12, 13, 15, 18, 19, 21-23, and 25-27 have been rejected under 35 U.S.C. § 103(a) over EP 913,504 (EP '504) in view of Soviet Union Patent abstract number 1699755 (SU '755). Reconsideration of this rejection is respectfully requested for the following reasons.

Claim 13 has been amended to be in independent form. Claim 13 recites, among other things, closing of the passage by means of a plug made of thermostructural composite material, the plug made in two pieces that are assemble together so as to clamp onto the rim of the axial passage in the preform. For example, as noted in Applicants' specification (page 11, lines 21-34), a rim 30a of the bowl is clamped between lip 35a of plug piece 25 and rim 37a of plug piece 37. Neither EP '504 nor SU '755 disclose, teach, or suggest a plug that clamps onto the rim.

Furthermore, in the previous response, Applicant specifically noted that this recitation of claim 13 was not disclosed, taught, or suggested by EP '504 or SU '755. The Examiner has not addressed this argument. The Examiner states only that SU '755 forms a plug from two pieces of material. Accordingly, a *prima facie* case of obviousness of claim 13 has not been made out, and this claim is believed to be patentable over the prior art of record.

Regarding claim 1, there is no suggestion in EP '504 or SU '755 to make the recited plug from a thermostructural composite material as claimed, and not from graphite, as disclosed in SU '755. Merely because the claimed recitation may be possible is alone insufficient to establish obviousness. In particular, there is no evident basis to assert that SU '755 would have suggested

Application No. 09/889,860
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making a crucible and a plug therein out of the same material in general, that is, without limitation to graphite. Thus, there is simply no motivation or suggestion to combine the teachings of EP '504 and SU '755. To speculate that if the crucible in SU '755 were made of a thermostructural composite material, the plug would have been made from the same material is impermissible reliance on hindsight knowledge of the presently claimed invention.

Accordingly, claim 1 is believed to be patentable over EP '504 in view of SU '755.

Regarding claim 7, the Examiner relies on the silence of EP '504 in the matter of a surface treatment for the fibers to assert that "it can be assumed that the fibers were not provided with any special surface treatment." However, the lack of a teaching in EP '504 concerning the presence or absence of yarn surface treatments is at most inconclusive. Thus, the assertion that this silence suggests the absence rather than the presence of a surface treatment is arbitrary and without basis. In fact, one of ordinary skill would have known that the yarns in question usually have a surface treatment. Indeed, the present application states: "The fiber reinforcement is made from yarns of the kind commercially available but free from any of the surface treatment normally provided to provide surface functions that encourage bonding with an organic matrix when such yarns are used to form fiber/resin type composite materials that are not intended for high temperature applications." (Specification, page 8, line 32, to page 9, line 4, (emphasis added)) The use of yarns without such surface treatments provides the non-trivial technical benefit of "obtaining better dimensional stability by avoiding the appearance of internal stresses while making the composite material."

Application No. 09/889,860
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Confirmation No.: 1184

(Specification, page 5, lines 30-32) Thus, claim 7 is also believed to be patentable over the prior art of record.

With regard to claim 15, the cited references fail to teach or suggest a final chemical vapor infiltration step after closing the passage with the recited plug. The mention of forming a carbon-containing coating on plugs intended for repair of existing graphite crucibles in the SU '755 abstract (Office Action, page 6) does not suggest or motivate subsequent chemical vapor infiltration. Likewise, EP '504 does not disclose or suggest a temporal relationship between closing the hole 107 and a densification process.

Regarding claim 22, EP '504 does not disclose, teach, or suggest a protective layer made of a thermostructural composite material as presently claimed. Regardless of the material from which the bowl is made, the art does not teach or suggest a "protective layer" made from a thermostructural composite material and provided on the inside face of the bowl as claimed.

Regarding claim 23, as set forth previously, there is no indication in the cited art that the recited densification of consolidated bowl preforms by chemical vapor infiltration is conventional. See MPEP 2144.03. The Examiner however only reiterates that this recitation is taken as conventional. Accordingly, in the absence of supporting prior art, claim 23 is believed to be patentable over the prior art of record.

Claim 5 has been rejected under § 103(a) over EP '504 in view of SU '755 further taken with either one of Ioki et al. or De Jager. This claim is believed to be patentable for the reasons set forth above with respect to claim 1.

Application No. 09/889,860
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Confirmation No.: 1184

Claim 11 has been rejected under § 103(a) over EP '504 in view of SU '755 further taken with Japanese patent 11-255586. This claim is believed to be patentable for the reasons set forth above with respect to claim 1.

Claims 16-19 have been rejected under § 103(a) over EP '504 in view of SU '755 further taken with any one of Holcombe et al., Kondo et al., or Metter et al. Regarding claims 16 and 17, note that the Examiner refers to forming a silicon carbide "coating" on page 6 of the previous office action, which is a mischaracterization of the presently claimed invention. Claims 16 and 17 relate to the chemical vapor infiltration step recited in claim 15, from which they depend. This step is for densification; see block 100 in Fig. 2. These claims do not relate to the mere formation of a coating. Holcombe et al., Kondo et al., and Metter et al. disclose surface coatings, but do not mention CVI. Therefore, none of these references provides any teaching or suggestion relevant to the subject matter of these claims.

Claim 24 has been rejected under § 103(a) over EP '504 in view of SU '755 further taken with any one of Holcombe et al., Kondo et al., or Metter et al. and further in view of Japanese patent 11-255586. This claim is believed to be patentable for the reasons set forth above with respect to claim 1.

Regarding claims 26 and 27, the Examiner notes that EP '504 suggested a final chemical vapor infiltration operation. Claim 26, however, is directed toward densification, whereas claim 27 is directed toward the final chemical vapor infiltration performed in accordance with claim 15. Thus, the Examiner's assertion does not address claim 26.

Application No. 09/889,860
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Confirmation No.: 1184

In view of the above amendments and remarks, all claims are believed to be in condition for allowance, and reconsideration and indication thereof are respectfully requested. The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite prosecution of the present application.

Respectfully submitted,

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